

## **Historic, Archive Document**

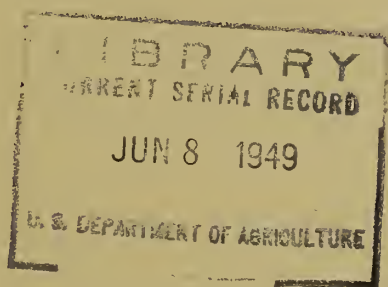
Do not assume content reflects current  
scientific knowledge, policies, or practices.



re  
6  
1 F50

# FEDERAL-STATE COOPERATIVE SNOW SURVEYS and IRRIGATION WATER FORECASTS

for  
**OREGON**  
May 1, 1949



by  
Division of Irrigation, Soil Conservation Service  
United States Department of Agriculture  
and  
Oregon Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the Oregon State Engineer,  
U.S. Forest Service, National Park Service and other Federal, State, and local organizations



FEDERAL-STATE COOPERATIVE  
SNOW SURVEYS AND IRRIGATION WATER FORECASTS  
FOR  
OREGON

Report Prepared  
by  
W. T. Frost -- Hydraulic Engineer

Division of Irrigation  
Soil Conservation Service  
and  
Oregon Agricultural Experiment Station  
P. O. Box 1149  
Medford, Oregon



May 1, 1949

REVISED WATER SUPPLY OUTLOOK

Oregon's 1949 water supply prospects remain "good" throughout the state in spite of the April "drought" just experienced. Late season deficiencies will probably not be experienced anywhere in the state if normal conditions of snow-melt and precipitation prevail. New runoff records will be established in scattered areas with unusually high flow to be expected in many areas.

Mountain snow cover has already released much water because of the abnormally warm and dry April weather but this cover still contains water averaging 28 percent above normal throughout the state. Locally, the snow blanket is below normal in water content in the Owyhee, Malheur and Great Basin drainages but it is still greatly above normal in the northern end of the Cascades. Snow surveys at key stations in the Cascades indicate the present snow now contains up to 168 percent of the average water content at the highest elevations. Still Creek snow course, located on Mt. Hood near Government Camp at an elevation of 3700 feet, has a measured water content 268 percent of average.

State-wide precipitation during April was extremely short varying from a low of about 8 percent normal in Southeastern Oregon to a high of 68 percent normal in the Wallowa Mountain area. Other areas had from 18 to 43 percent of their normal precipitation.

Total water stored in all important Oregon reservoirs is 12 percent greater than at this date last year, 2 percent greater than in 1947, 7 percent less than in 1946 and 6 percent less than the 10-year average. Of Oregon's more important reservoirs, 91 percent are half full or better.

Revised streamflow forecasts for the state indicate the need for some reductions from the April 1 forecasts throughout the area because of the lack of precipitation in April. The Owyhee and Malheur basins will probably produce about 20 and 12 percent less runoff, respectively, than was forecast on April 1. This will not mean water shortages in this area, however. Similarly, the inflow to Upper Klamath Lake is expected to be about 12 percent less than was indicated on April 1. (See pages 2 and 3 for revised forecasts)

New record stream flows for the April-September period are still likely to be established on the Walla Walla, Deschutes, White and Clackamas Rivers. High peak flows have already occurred or will occur on those streams and on the Crooked, North and South Santiam, Sandy, Umatilla, Hood and Applegate Rivers.





REVISED STREAMFLOW FORECASTS, MAY 1, 1949

The following revised runoff forecasts are based on mountain snow cover and on the assumption that precipitation and temperature during the remaining runoff season will be approximately normal. Appreciable deviations from normal of temperature and/or precipitation, especially during May or June, will correspondingly modify these forecasts.

BASIN AND STREAM	Apr-Sept., Inc. Streamflow in Thous. A. F.				
	Forecast	Measured	Runoff*	10-yr. Avg.	
	1949	1948	1947	1946	1938-47
Columbia R. at the Dalles <sup>c</sup>	110000.0 127590.0	98488.0		85740.0	
<u>NORTHCENTRAL OREGON</u>					
Hood River, W. Fk. near Dee	220.0	a	111.1	164.7	131.8
White R. below Tygh Valley	250.0	a	103.1	181.0	123.1
<u>UMATILLA-WALLA WALLA</u>					
Walla Walla R. So. Fk. nr. Milton	85.0	102.1	62.7	75.0	62.4
Umatilla R. near Gibbon	105.0	a	53.9	103.5	75.6
Umatilla R. at Pendleton	200.0	a	96.4	194.0	145.1
McKay C. above McKay Reservoir	30.0	63.4	16.1	20.9	25.1
<u>NORTHEASTERN OREGON</u>					
Grande Ronde R. nr. LaGrande	240.0	366.2	118.8	179.6	151.1
Catherine Ck. near Union	85.0	109.9	60.9	76.0	66.3
Bear Ck. near Wallowa	67.0	97.4	69.6	83.4	65.8
Lostine R. near Lostine	125.0	153.5	127.7	149.7	117.5
Hurricane Ck. near Joseph	43.0	59.4	49.9	54.3	43.0
Wallowa R. E. Fk. plus Power Pl.	11.0	a	10.4	13.3	11.1
Imnaha River at Imnaha	275.0	a	228.1	320.5	286.6
Powder River at Salisbury	63.0	78.6	43.6	76.4	57.8
Burnt R. nr. Herford (Natural Flow)	35.0	62.7	20.2	52.8	35.5
<u>EASTERN OREGON</u>					
Malheur R. Mid. Fk. nr. Drewsey	68.0	74.0	34.1	83.6	75.3
Malheur R. N. Fk. at Beulah	57.0	64.5	32.7	68.9	59.8
Owyhee R. above Owyhee Reservoir	520.0	257.3	176.6	467.3	421.2
John Day R. at Prairie City, combined with Power Canal	45.0	a	38.6	62.2	46.6
John Day R. Mid. Fk. at Ritter	130.0	a	93.1	140.2	106.4
John Day R. No. Fk. near Dale	270.0	a	216.5	267.8	217.9
Strawberry Ck. nr. Prairie City	7.8	a	7.9	9.9	8.0
<u>HARNEY BASIN</u>					
Trout Creek near Denio	6.5	a	3.8	7.3	9.2
Silvies R. near Burns	80.0	133.1	47.7	99.6	88.6
Donner und Blitzen R. nr. Frenchglen	55.0	a	38.9	51.0	62.8

\* - Discharge data from preliminary records of U.S. Geological Survey and Oregon State Engineer

a - Discharge data not available

b - April-June rather than April-September

c - Forecast by Boise Office of Soil Conservation Service



Revised Streamflow Forecasts, May, 1949 (Cont'd.)

BASIN AND STREAM	Apr.-Sept. Inc. Streamflow in Thous. A.F.				
	Forecast	Measured Runoff*		10-yr. avg.	
	1949	1948	1947	1946	1938-47
<u>CENTRAL OREGON</u>					
Ochoco Reservoir Net Inflow	25.0	72.3	8.2	46.4	19.9
Crooked River nr. Post	170.0	a	40.6	137.3	102.2
Crescent Lake Net Inflow	22.0	a	19.2	22.2	13.7
Little Deschutes R. nr. Lapine	95.0	a	64.9	114.1	68.2
Odell Ck. near Crescent	34.0	a	28.8	32.6	24.8
Deschutes R. below Snow Creek	85.0	a	64.5	78.2	48.6
Crane Prairie Reservoir Inflow	170.0	a	123.4	153.6	97.3
Deschutes R. at Pringle Falls	340.0	a	284.8	297.7	258.0
Deschutes R. at Bonham Falls	600.0	a	495.1	547.5	449.6
Tumalo Creek and C.S. Canal	56.0	a	49.1	60.9	43.4
Squaw Creek near Sisters	64.0	a	45.7	63.5	44.0
<u>SOUTHCENTRAL OREGON</u>					
Chewaucan R. near Paisley	68.0	74.5 <sup>b</sup>	32.9 <sup>b</sup>	78.3 <sup>b</sup>	64.6 <sup>b</sup>
Deep Creek above Adel	65.0	70.8 <sup>b</sup>	29.1 <sup>b</sup>	57.6 <sup>b</sup>	59.4 <sup>b</sup>
<u>KLAMATH BASIN</u>					
Sprague R. above Chiloquin	190.0	239.9	105.5	261.9	231.5
Williamson R. below Sprague R.	350.0	356.3	223.8	415.4	377.0
Upper Klamath Lake Net Inflow	470.0	474.8	326.2	536.7	484.0
Clear Lake Res. Net Inflow	39.0	70.2	15.9	33.9	41.3
Gerber Res. Net Inflow	31.5	21.9	4.3	21.1	21.3
<u>SOUTHERN OREGON</u>					
Applegate R. near Ruch	190.0	a	64.6	129.6	116.4
Hyatt Res. Net Inflow	6.8	9.1	2.1	5.5	5.3
Fourmile Lake Net Inflow	7.5	11.0	6.0	8.7	6.7
Little Butte Ck. N. Fk. below					
Fish Lake (Natural Flow)	14.5	a	10.1	15.7	13.2
Rogue R. So. Fk. above Imnaha Ck.	74.0	a	41.4	63.5	49.6
Rogue R. Mid. Fk. plus Power Canal	90.0	a	63.4	80.2	68.3
Rogue R. N. Fk. above Prospect	370.0	343.7	248.8	370.4	282.6
Rogue R. below So. Fk.	800.0	732.5	539.9	735.4	613.3
<u>WILLAMETTE VALLEY</u>					
Willamette R. Mid. Fk. at Eula	1100.0	a	737.1	830.3	704.1
McKenzie R. at McKenzie Bridge	725.0	a	501.2	595.2	500.3
McKenzie River near Vida	1600.0	a	1084.2	1227.8	1054.8
Clackamas R. at Big Bottom	250.0	a	a	178.9	143.3 <sup>e</sup>

\* -Discharge data from preliminary records of U. S. Geological Survey and Oregon State Engineer

a -Discharge data not available

b -April-June rather than April-September

c -Forecast by Boise Office of Soil Conservation Service

d -Gaging station discontinued

e -1938-46 only



STATUS OF RESERVOIR STORAGE, MAY 1, 1949

BASIN and STREAM	RESERVOIR	USABLE CAPACITY (Thous.A.F.)	THOUS. A.F. IN STORAGE ABOUT MAY 1				
			1949	1948	1947	1946	10-yr.avg. 1938-47

UPPER COLUMBIA DRAINAGE  
LOWER SLAKE IN OREGON

<u>Owyhee</u>	Antelope	36.5	N.R.	N.R.	22.0	25.8	30.4
	Owyhee	715.0	592.7	481.8	626.9	711.4	689.0
<u>Malheur</u>	Warm Springs	191.0	94.0 <sup>c</sup>	70.2	143.5	192.9	171.5
	Agency Valley	60.0	58.5 <sup>e</sup>	52.9	56.8	55.2	58.8
<u>Burnt</u>	Unity	25.2	23.4	19.4	24.6	22.5	22.4
<u>Powder</u>	Thief Valley	17.4	11.9	17.4	17.6	18.5	17.6
<u>Grande Ronde</u>	Wallowa Lake	40.9	21.1	19.3	25.9	17.9	26.9

LOWER COLUMBIA DRAINAGE

<u>Umatilla</u>	McKay	74.0	65.4	71.9	73.1	71.3	67.2
	Cold Springs	50.0	48.0	49.7	50.0	48.3	48.5
<u>Deschutes</u>	Ochoco	46.0	39.0	41.5	36.4	46.9	33.1
	Crescent Lake	80.0	53.4	49.9	53.8	34.8	39.8
	Crane Prairie	50.0	42.6	31.8	43.2	41.8	39.1
	Wickiup	180.0	184.0	141.8	95.6	85.2	56.2 <sup>f</sup>
<u>Willamette</u>	Cottage Grove	30.1 <sup>b</sup>	26.7	29.6	29.9	24.5	27.7 <sup>f</sup>
	Fern Ridge	94.2 <sup>b</sup>	73.4	93.3	87.8	74.7	70.9 <sup>d</sup>

WEST COAST DRAINAGE

<u>Rogue</u>	Fish Lake	7.7	6.1	4.0	5.0	4.9	5.5
	Fourmile Lake <sup>a</sup>	16.0	8.6	2.4	6.6	9.0	9.8
	Emigrant Gap	8.2	8.2	8.2	8.1	8.2	8.1
	Hyatt Prairie <sup>a</sup>	16.0	12.6	5.8	4.8	7.7	9.7
<u>Klamath</u>	Upper Klamath Lk.	584.0 <sup>c</sup>	513.6	482.9	431.7	445.4	491.0
	Gerber	94.0	47.7	40.9	42.6	66.9	64.7
	Clear	440.2	184.4	176.6	220.5	297.7	291.4
<u>Goose Lake</u>	Cottonwood	4.1	3.5	3.4	4.0	4.0	3.9 <sup>g</sup>
	Drew	62.5	62.5	45.0	39.7	57.5	56.2 <sup>h</sup>

N.R. - No Report

a - By ditch to Rogue River side  
from Klamath Drainage

b - Storage space reserved for flood control

c - Based on gage zero elevation of 4135.0

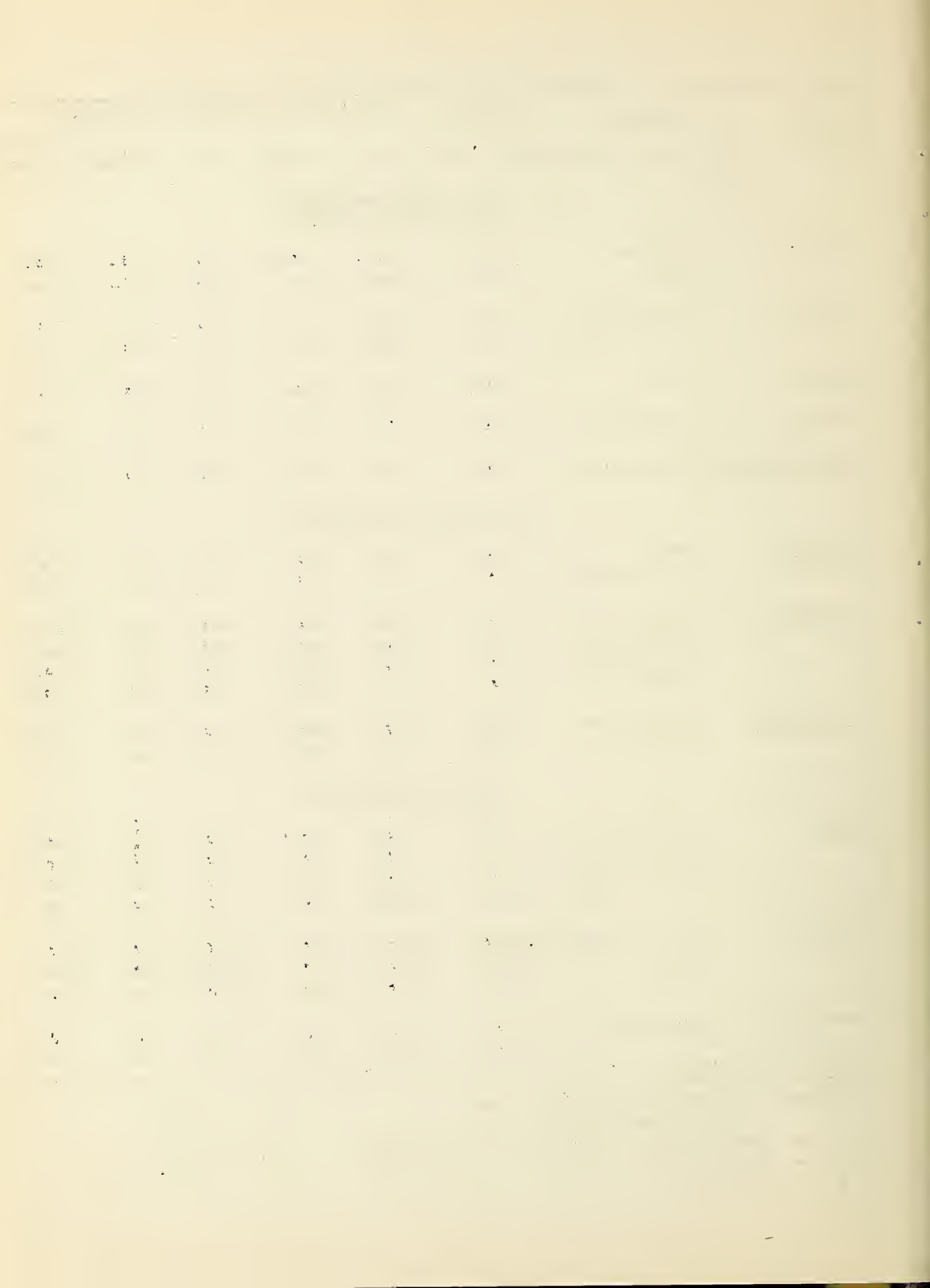
d - 1942-47

e - 4-23-49

f - 1943-48

g - 1945-47

h - Excl. 1942





# VALLEY PRECIPITATION<sup>a</sup>

DRAINAGE DIVISIONS	CURRENT YEAR		LAST YEAR	
	Oct. 1, 1948 - May 1, 1949		Oct. 1, 1947 - May 1, 1948	
	P	D	P	D
Southeastern	3.97	-2.60	6.1	-0.5
Southcentral	5.04	-1.91	11.6	-0.1
Central	7.58	-0.57	11.2	+2.5
Columbia River	12.46	+0.49	12.7	+3.1
Wallowa Mountains	8.88	-1.67	12.4	+0.9
Blue Mountains	9.24	-1.59	14.3	+1.9
Southern	16.82	-2.83	23.7	+3.9
Willamette Valley	47.96	+3.04	54.4	+10.2

P - Inches Precipitation

D - Inches Departure from Normal

<u>Southeastern</u>	Malheur and Owhyee drainages
<u>Southcentral</u>	Interior Basin drainages and Goose Lake
<u>Central</u>	Deschutes and Crooked drainages
<u>Columbia River</u>	Lower valleys of the Walla Walla, Umatilla, John Day, Deschutes and Hood River drainages.
<u>Wallowa Mountains</u>	Imnaha, Wallowa, Catherine, Eagle and Pine drainages.
<u>Blue Mountains</u>	Upper valleys of the Burnt, Powder, Grande Ronde, Umatilla, Walla Walla, John Day, Silvies and Malheur drainages.
<u>Southern</u>	Umpqua, Rogue and Klamath drainages
<u>Willamette Valley</u>	All Willamette drainages.

Note: Stations used for determining the averages for the current year are not necessarily the same as those used last year.

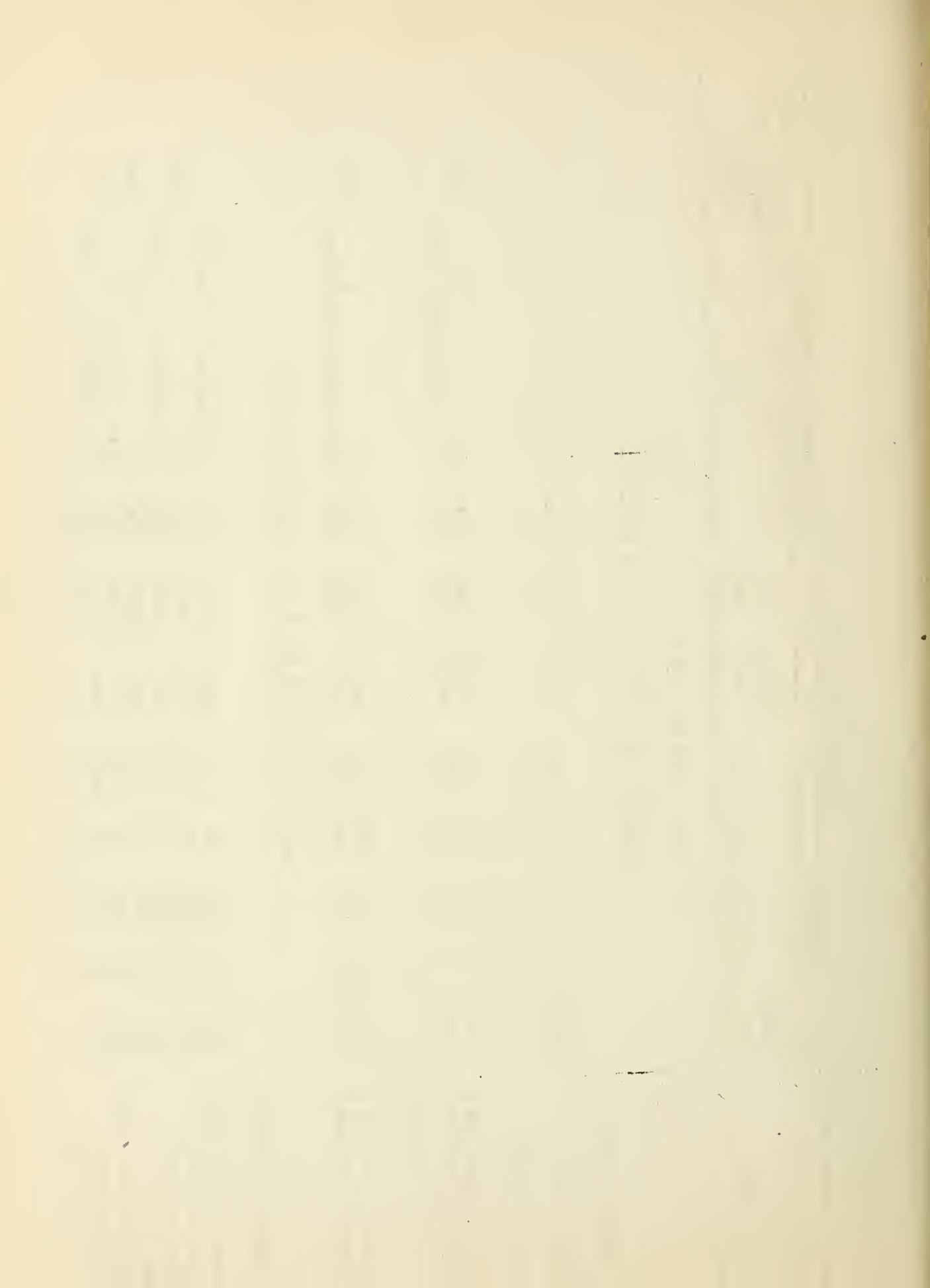
a - Preliminary data computed from Weather Bureau records.





## OREGON SNOW SURVEYS, MAY, 1949

[illegible]



# OREGON SNOW SURVEYS, MAY, 1949

DRAINAGE BASIN AND SNOW COURSE	LOCATION		SNOW COVER MEASUREMENTS										
	Number or State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Years of Record	Past Record Av. Water Content (Inches)	
								1949	1948	1947			
SANDY RIVER													
Phlox Point-Mt. Hood	452	6	3S	9E	5600	5-2	180.7	89.1	72.5	48.1	10	53.1	
Still Creek	451	25	3S	8½E	3700	5-2	56.2	29.8	21.5	0.0	9	11.1	
WILLAMETTE RIVER													
Breitenbush	551	21	9S	7E	2325	4-30	12.3	5.7	0.0	-	1	0.0	
Cascade Summit	321	7	23S	6E	4880	4-29	64.0	31.7	33.0	-	3	31.0	
Charlton Lake	327	23	21S	6E	5750	5-2	80.8	35.0	No previous	May survey			
Hogg Pass	351	24	13S	7½E	4755	5-3	124.0	65.3	-	-	2	57.8	
Santiam Junction	552	14	13S	7E	3990	5-3	41.1	21.3	-	-	1	11.6	
Waldo Lake	521A	15	21S	6E	5500	5-2	83.4	37.5	No previous	May survey			
Willamette Pass	323	21	24S	5½E	5600	4-27	88.9	46.1	-	-	1	36.8	
WEST COAST DRAINAGE													
UMPUQUA RIVER													
Diamond Lake	743	29	27S	6E	5315	4-30	33.6	15.4	21.0	1.8	10	15.9	
Windigo Pass	944	20	25S	6E	5800	4-26	96.0	50.0	No previous	May survey			
ROGUE RIVER													
Annie Spring	831	19	31S	6E	6018	5-1	93.4	43.8	44.3	29.6	10	37.3	
Billie Creek Div.	722	30	36S	5E	5300	4-25	41.5	22.3	-	-	2	27.8	
Fish Lake	725	3	37S	4E	4865	4-24	13.9	8.3	No previous	May survey			
Hobart Lake	7221	17	40S	3E	5010	5-2	0.0	0.0	"	"	"		
Hyatt Prairie Res.	723	15	39S	3E	4900	5-2	0.0	0.0	8.8	-	1	8.8	
Park Headquarters	838	8	31S	6E	6450	5-4	116.4	59.0	58.4	45.7	5	57.3	
Silver Burn	7219	30	30S	4E	3720	5-1	0.0	0.0	No previous	May survey			



# OREGON SNOW SURVEYS, MAY, 1949

DRAINAGE BASIN AND SNOW COURSE	LOCATION					SNOW COVER MEASUREMENTS						
	Number or State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Past Record	
								1949	1948	Same approx. Date 1947		Years of Record
KLAMATH LAKE BASIN												
Annie Spring	831	19	31S	6E	6018	5-4	93.4	43.8	44.3	29.6	10	37.3
Chemult No. 1	834	21	27S	8E	4760	5-1	0.0	0.0	No previous	May survey		
Hyatt Prairie Res.	723	15	39S	3E	4900	5-2	0.0	0.0	8.8	-	1	8.8
Park Headquarters	838	8	31S	6E	6450	5-4	116.4	59.0	58.4	45.7	5	57.3



SPECIAL MID-APRIL SNOW SURVEYS AND SNOW SURVEY DATA NOT PUBLISHED IN APRIL 1 REPORT

DRAINAGE BASIN and SNOW COURSE	LOCATION		SNOW COVER MEASUREMENTS					
	Number or State	Sec. Twp. Range Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)	Same Approx. Date 1918 1917	Years of Record	Past Record av. Water Content (Inches)
GRANDE RONDE RIVER								
Meacham	221	24&25 1S 35E	4300	4-15	12.1	5.9	Special Mid-April Survey	"
Tollgate	212	32 4N 38E	5070	4-15	71.7	37.5	"	"
WALLA WALLA RIVER								
Tollgate	212	32 4N 38E	5070	4-15	71.7	37.5	"	"
UMTILLA RIVER								
Emigrant Springs	222	29 1N 35E	3925	4-15	3.2	1.4	"	"
Meacham	221	24&25 1S 35E	4300	4-15	12.1	5.9	"	"
Tollgate	212	32 4N 38E	5070	4-15	71.7	37.5	"	"
DESCHUTES RIVER								
New Dutchman Flat	324A	21 18S 9E	6400	4-17	116.4	65.4	Special Mid-April Survey	
DESCHUTES RIVER								
Three Creeks Meadows	331	3 17S 9E	5600	5-5	36.3	16.9	No previous survey	
CLACKAMAS RIVER								
Peavine Ridge	591	14&15 6S 7E	3500	5-4	55.4	28.5	13.0	5 11.7





The following organizations cooperate in the Oregon snow survey work:

STATE

Idaho Cooperative Snow Surveys  
Nevada Cooperative Snow Surveys  
Oregon Agricultural Experiment Station  
Oregon State Engineer and corps of State Watermasters  
Oregon State Highway Engineers

FEDERAL

Department of Agriculture  
Forest Service  
Soil Conservation Service  
Department of Commerce  
Weather Bureau  
Department of the Interior  
Bonneville Power Administration  
Bureau of Reclamation  
Fish and Wildlife Service  
Geological Survey  
Indian Service  
National Park Service  
War Department  
Army Engineer Corps

PUBLIC UTILITIES

California-Pacific Utilities Company  
Portland General Electric Company  
The California Oregon Power Company

MUNICIPALITIES

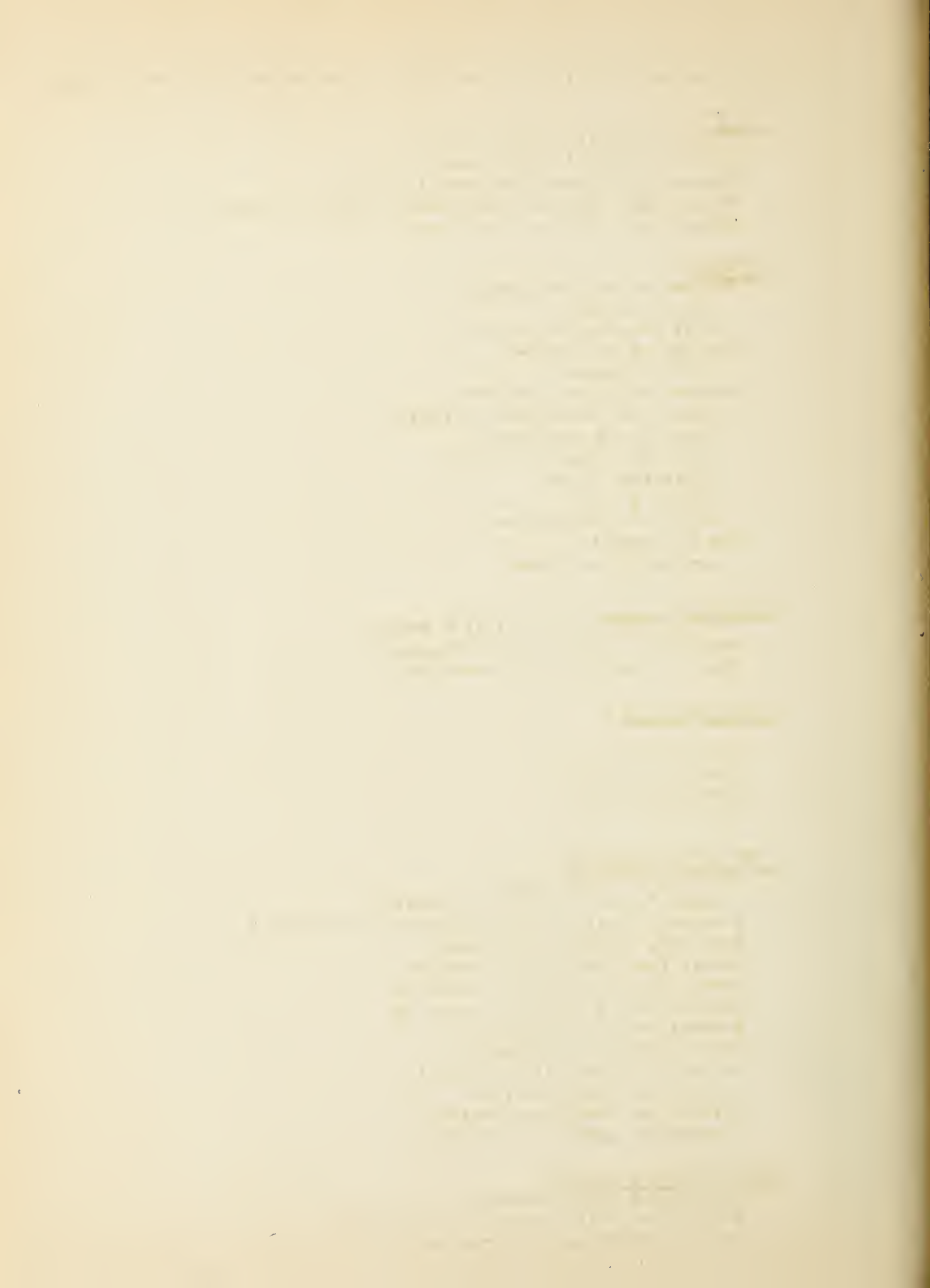
City of Baker  
City of Corvallis  
City of LaGrande  
City of The Dalles

IRRIGATION DISTRICTS

Associated Ditch Companies  
Central Oregon Irrigation District  
Deschutes County Municipal Improvement District  
East Fork Irrigation District  
Grants Pass Irrigation District  
Jordan Valley Irrigation District  
Lakeview Water Users Incorporated  
Medford Irrigation District  
Ochoco Irrigation District  
Rogue River Irrigation District  
Talent Irrigation District  
Vale-Oregon Irrigation District  
Warm Springs Irrigation District

PRIVATE ORGANIZATIONS

Amalgamated Sugar Company  
South Wasco Soil Conservation District  
The Crag Rats-Hood River-Oregon





B3 288













